

# Postulates

- 1 Ruler Postulate** The points on a line can be matched one to one with the real numbers. The real number that corresponds to a point is the coordinate of the point. The distance between points  $A$  and  $B$ , written as  $AB$ , is the absolute value of the difference between the coordinates of  $A$  and  $B$ . (p. 9)
- 2 Segment Addition Postulate** If  $B$  is between  $A$  and  $C$ , then  $AB + BC = AC$ . If  $AB + BC = AC$ , then  $B$  is between  $A$  and  $C$ . (p. 10)
- 3 Protractor Postulate** Consider  $\overrightarrow{OB}$  and a point  $A$  on one side of  $\overrightarrow{OB}$ . The rays of the form  $\overrightarrow{OA}$  can be matched one to one with the real numbers from 0 to 180. The measure of  $\angle AOB$  is equal to the absolute value of the difference between the real numbers for  $\overrightarrow{OA}$  and  $\overrightarrow{OB}$ . (p. 24)
- 4 Angle Addition Postulate** If  $P$  is in the interior of  $\angle RST$ , then  $m\angle RST = m\angle RSP + m\angle PST$ . (p. 25)
- 5** Through any two points there exists exactly one line. (p. 96)
- 6** A line contains at least two points. (p. 96)
- 7** If two lines intersect, then their intersection is exactly one point. (p. 96)
- 8** Through any three noncollinear points there exists exactly one plane. (p. 96)
- 9** A plane contains at least three noncollinear points. (p. 96)
- 10** If two points lie in a plane, then the line containing them lies in the plane. (p. 96)
- 11** If two planes intersect, then their intersection is a line. (p. 96)
- 12 Linear Pair Postulate** If two angles form a linear pair, then they are supplementary. (p. 126)
- 13 Parallel Postulate** If there is a line and a point not on the line, then there is exactly one line through the point parallel to the given line. (p. 148)
- 14 Perpendicular Postulate** If there is a line and a point not on the line, then there is exactly one line through the point perpendicular to the given line. (p. 148)
- 15 Corresponding Angles Postulate** If two parallel lines are cut by a transversal, then the pairs of corresponding angles are congruent. (p. 154)
- 16 Corresponding Angles Converse** If two lines are cut by a transversal so the corresponding angles are congruent, then the lines are parallel. (p. 161)
- 17 Slopes of Parallel Lines** In a coordinate plane, two nonvertical lines are parallel if and only if they have the same slope. Any two vertical lines are parallel. (p. 172)
- 18 Slopes of Perpendicular Lines** In a coordinate plane, two nonvertical lines are perpendicular if and only if the product of their slopes is  $-1$ . Horizontal lines are perpendicular to vertical lines. (p. 172)
- 19 Side-Side-Side (SSS) Congruence Postulate** If three sides of one triangle are congruent to three sides of a second triangle, then the two triangles are congruent. (p. 234)
- 20 Side-Angle-Side (SAS) Congruence Postulate** If two sides and the included angle of one triangle are congruent to two sides and the included angle of a second triangle, then the two triangles are congruent. (p. 240)
- 21 Angle-Side-Angle (ASA) Congruence Postulate** If two angles and the included side of one triangle are congruent to two angles and the included side of a second triangle, then the two triangles are congruent. (p. 249)
- 22 Angle-Angle (AA) Similarity Postulate** If two angles of one triangle are congruent to two angles of another triangle, then the two triangles are similar. (p. 381)
- 23 Arc Addition Postulate** The measure of an arc formed by two adjacent arcs is the sum of the measures of the two arcs. (p. 660)
- 24 Area of a Square Postulate** The area of a square is the square of the length of its side, or  $A = s^2$ . (p. 720)
- 25 Area Congruence Postulate** If two polygons are congruent, then they have the same area. (p. 720)
- 26 Area Addition Postulate** The area of a region is the sum of the areas of its nonoverlapping parts. (p. 720)
- 27 Volume of a Cube** The volume of a cube is the cube of the length of its side, or  $V = s^3$ . (p. 819)
- 28 Volume Congruence Postulate** If two polyhedra are congruent, then they have the same volume. (p. 819)
- 29 Volume Addition Postulate** The volume of a solid is the sum of the volumes of all its nonoverlapping parts. (p. 819)